

## **WHAT IS CLAIMED IS:**

1. A shift control method of an automatic transmission, comprising:  
determining if an inhibitor switch is malfunctioning;  
detecting a current vehicle speed when the inhibitor switch is malfunctioning;  
5 determining if the current vehicle speed equals 0;  
obtaining a maximum vehicle speed of the reverse R range when the current  
vehicle speed does not equal 0;  
comparing the current vehicle speed with the maximum vehicle speed of the  
reverse R range;  
10 determining a target shift-speed on the basis of vehicle driving state parameters  
when the current vehicle speed is higher than the maximum speed of the reverse R  
range; and  
controlling actuators of the transmission such that the target shift-speed is  
engaged.  
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2. The shift control method of claim 1, wherein in the determining of the target  
shift-speed, the target shift-speed is selected from shift-speeds of the transmission  
excluding the first forward speed.
- 20 3. The shift control method of claim 1, wherein the vehicle driving state  
parameters include a vehicle speed and a degree of accelerator operation.
4. The shift control method of claim 1, further comprising:  
determining, in the case that the inhibitor switch is malfunctioning, if other sensors or  
25 the actuators of the transmission are malfunctioning; and  
determining the target shift-speed as a predetermined shift-speed when other sensors or  
the actuators of the transmission are malfunctioning such that the predetermined shift-  
speed is engaged by the controlling of actuators.
- 30 5. A shift control apparatus of an automatic transmission, comprising:  
an inhibitor switch for detecting a shift range designated by a driver;

a vehicle speed detector for detecting vehicle speed;  
an accelerator position detector for detecting a degree of accelerator operation;  
actuators for executing shifting operation of the automatic transmission; and  
a transmission control unit for controlling the actuators based on a target shift-  
5 speed that is determined on the basis of input signals from the inhibitor switch, the  
vehicle speed detector, and the accelerator position detector,

wherein the transmission control unit executes a set of instructions, the set of  
instructions comprising instructions for:

determining if an inhibitor switch is malfunctioning;  
10 detecting a current vehicle speed when the inhibitor switch is malfunctioning;  
determining if the current vehicle speed equals 0;  
obtaining a maximum vehicle speed of the reverse R range when the current  
vehicle speed does not equal 0;

15 comparing the current vehicle speed with the maximum vehicle speed of the  
reverse R range;

determining a target shift-speed on the basis of vehicle driving state parameters  
when the current vehicle speed is higher than the maximum speed of the reverse R  
range; and

20 controlling actuators of the transmission such that the target shift-speed is  
engaged.

6. The shift control apparatus of claim 5, wherein in the determining of the target  
shift-speed, the target shift-speed is selected from shift-speeds of the transmission  
excluding the first forward speed.

25 7. The shift control apparatus of claim 5, wherein the vehicle driving state  
parameters include a vehicle speed and a degree of accelerator operation.

8. The shift control apparatus of claim 5, wherein the set of instructions further  
30 comprises:

determining, in the case that the inhibitor switch is malfunctioning, if other

sensors or the actuators of the transmission are malfunctioning; and

determining the target shift-speed as a predetermined shift-speed when other sensors or the actuators of the transmission are malfunctioning such that the predetermined shift-speed is engaged by the controlling of actuators.